ABSTRACT OF THE DISCLOSURE

        The data processor has a set-associative
cache memory capable of performing associative
operation using tag information for an indexed cache
line. The cache memory includes way prediction part
for performing a selection of a way based on the
prediction in parallel with the associative operation,
generation part for generating way selection determin-
ing information based on the associative operation
using the subsequent access address during a penalty
cycle caused by a prediction miss of the way prediction
part, and control part for making a way selected for
the subsequent access address after the penalty cycle
on the basis of the way selection determining informa-
tion. Since a way to be hit at the subsequent cache
access can be predetermined during the preceding
penalty cycle, the cumulative number of penalty cycles
can be reduced.